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[In the reviewer's opinion this jaw agrees in most of its characteristic features with the Leptictidae, a family of Insectivora, and the single feature of resemblance to *Myrmecobius*, the relative height of inner and outer trigonid cusps is by no means sufficient evidence for relationship to the marsupials. The tooth considered by Mr. Gidley to be the first molar appears to the reviewer to be clearly a fourth premolar, as it is set deeper in the jaw and less worn than the tooth behind it, belongs therefore to the successional series or premolars, not to the first series of cheek teeth (milk and true molars), and is characteristically like the fourth premolar of all the Leptictid genera, especially that of an undescribed genus from the Paleocene (Torrejon formation). The skull and skeleton characters of *Myrmecobius* are, on the other hand, in near agreement throughout with the polyprotodont marsupials, and wholly at variance with Gidley's conclusion of an independent parallel evolution of the group from pre-Tertiary ancestors. W. D. M.]

An important monograph by Professor H. Winge,³⁹ of Copenhagen, upon the Edentata of the Pleistocene of Brazil includes an authoritative systematic revision of the order, and critical notes of great interest.

Dr. O. Abel, of Vienna, has published a small but richly illustrated book entitled "Die vorzeitlichen Säugetiere." American fossil mammals are exceptionally well represented.

Under the title of "Climate and Evolution" Dr. W. D. Matthew,⁴⁰ of the American Museum of Natural History, presents a theory accounting for the observed geographical distribution of animals in present and past ages. He begins by applying to the facts certain modern geological doctrines, such as the correlated alternations of elevation and of climate during geological time, the isostatic balance of continental and ocean masses, and the persistence of the great continental masses which never sank to abyssal depths, but often permitted the sea to make temporary incursions

upon their surfaces. Partly by means of a remarkable series of maps, showing the present and past distribution of many races of mammals, the author adduces very weighty evidence for the view that these races originated in the northern continents and then spread southward into South America, Africa, southeastern Asia and Australia.

Professor H. F. Osborn,⁴¹ of the American Museum of Natural History, contributes to the American Naturalist an extended study of certain features of the process of evolution. Basing his conclusions on a wide range of zoological, experimental and paleontological data, he develops the distinction between "rectigradations," or qualitatively and numerically new characters and "allometrons," or changes in proportion, degree or intensity.

The same author⁴² summarizes the successive advances and retreats of the continental glaciers and the corresponding shiftings of the floras, faunas and human populations. The special feature of this paper is the demonstration that in Europe, as in America, the so-called "warm fauna" survives until the advance of the fourth glaciation. The last topic is more fully treated in Professor Osborn's recently published work entitled "Men of the Old Stone Age." Here the author gives a detailed description and analysis of the long series of Paleolithic stages in Europe, with a series of new restorations of *Pithecanthropus*, of *Eoanthropus* and of the Races of Neanderthal and Crô-Magnon.

C. R. EASTMAN,
W. K. GREGORY,
W. D. MATTHEW

SPECIAL ARTICLES

A PHOMA DISEASE OF WESTERN WHEAT-GRASS

WESTERN wheat-grass, *Agropyron smithii* Rydb. is a very important forage plant in many of the pastures in the Salt Lake Valley,

⁴¹ *American Naturalist*, Vol. 49, April, 1915, pp. 193-239.

⁴² "Revision of the Pleistocene of Europe, Asia and Northern Africa," *Annals N. Y. Acad. Sci.*, July, 1915.

³⁹ "Aftryk af 'E Museo Lundii' Köbenhavn," 1915.

⁴⁰ *Annals N. Y. Acad. Sci.*, Vol. 24, 1915.

and any disease which would tend to limit its growth might be considered as being of economic importance. During the past season the writer has collected at a number of points within the Salt Lake Valley specimens of this grass on which there was found a *Phoma* which seems not to have been heretofore recorded as occurring on it.

The species of *Phoma* under consideration does not seem to agree with any of the species described as occurring on various species of Gramineæ. A review of the literature indicates that a considerable number of species of *Phoma* have been found on the Gramineæ but many of them are imperfectly described, so that it is difficult to tell whether the species of *Phoma* occurring on Western wheat-grass is or is not new. In some respects it resembles *Phoma lophio stomoides* Sacc., although the spores are smaller, being as a rule less than 15μ in length; rarely spores of 15μ or over are found. Owing to the size of the spores and other prominent characters it is possible that the species is new. A more extended note will be published later.

P. J. O'GARA

SALT LAKE CITY, UTAH,
September 23, 1915

A FUNGUS OF UNCERTAIN SYSTEMATIC POSITION OCCURRING ON WHEAT AND RYE

For some time the writer has been studying a very interesting organism which has been found occurring on wheat and rye. Specimens of wheat and rye infected with the organism have been collected at various points in the Salt Lake Valley. The fungus seems to attack the heads of both wheat and rye some time before they emerge from the sheaths. Very often the heads are so severely attacked as not to emerge but remain permanently within the sheath. The fungus is usually found on the rachis, the glumes, the essential organs and the inner parts of the sheaths. At no time has it been found to occur on the internodes below the upper node. The effect upon the inflorescence seems to be such as to prevent the normal development of the essential organs.

The organism was readily isolated and has

been grown in pure culture for several months. It grows readily in agar, potato, rice and other media producing normal mycelium and fruiting bodies. The mycelium is white or hyaline, multi-septate and much branched, varying from about 2.5 to 5.8μ in thickness. Perithecia-like bodies are borne on either short or long stalks on the mycelium or they may be borne terminally. Generally they are found singly but often are more or less grouped. These bodies are from 9 to 17.5μ in diameter, being spherical or slightly oval, brown to dark brown in color and containing small refractive bodies 2.5 to 5.8μ in diameter held in a more or less granular mass. The number of refractive bodies may vary from 1 to 6 , there being no seeming regularity in number. The walls of the perithecia-like bodies are $\frac{1}{2}\mu$ or less in thickness and can be readily separated from the contents, leaving the contents virtually intact.

In some respects this fungus bears a striking resemblance to *Endomyces mali* Lewis.¹ However, no sporidia are produced and the perithecia-like bodies do not contain germinating ascospores. It is therefore only the general appearance of the fungus in culture that bears a resemblance to the perithecia-bearing mycelium of *Endomyces mali*. The perithecia-like bodies of this apparently new organism are produced singly or on short branches of the mycelium or terminally without the fusion of cells or nuclei. When the perithecia-like bodies are placed in culture media germination follows within a very short time, producing a vigorous mycelium which in turn produces perithecia-like bodies in about 5 to 7 days, depending upon temperature conditions.

It has not been determined as yet what may be the function of the refractive bodies generally found in the perithecia-like structure. It is possible that these bodies may be storage material inasmuch as they have not been seen to germinate. Undoubtedly a considerable amount of cytological work must be done in order to determine the systematic position of the fungus. This work is in progress and at

¹ Bulletin No. 178, Maine Agricultural Experiment Station, April, 1910.